

Work Order ID 74432

Thursday, September 29, 2011 12:43:00 PM



Page 1

Item ID: D350-636-011

Accept



Setup Start



Revision ID:

Stop



Item Name: Skidtube LH

Start Date: 9/29/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 10/13/2011 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals:

Process Plan: *MLJ*

Date: *9/29/11*

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D2750

F

D3492

C

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy blue file and type labels per PPP D350-636-011 CHG 006

Sulokay

MLJ 11-10-14

74432

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng/ Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110 	Skidtubes	0.00							
Skidtubes	Memo	0.00							
Skidtubes	1- Pick D2600-3 Bent								
	2- Deburr FWD and AFT ends, remove bending marks. Scribe batch# inside AFT end per dwg D2750								
	3- Drill pilot holes for blade fitting bolt holes using DT8983. Open to 0.500", deburr.								
	4- Locate DT8330 off of blade fitting bolt holes and drill pilot holes for blade fitting								
	5- Drill only two fwd step holes using DT9616. Ensure proper positioning.								
	6- Drill pilot holes as per Dwg D2750 sheet 4 (D2750-1 details). Drill using drill Jig DT8150 & DT8863A for first side only DT8863B for second side (detail B)								
	7- Clecko DT8863B on second side of tube and drill pilot holes for detail B. ***SECOND SIDE***								
	8-Open up holes for Detail B to 0.375" (4 holes per side) and blade fitting location holes to 0.500" (total of 4 holes per side) as per dwg D2750. Open up holes for ground handling and detail C to 0.500" (8 holes per side)								
	9-Drill pilot holes for wearplates as per Dwg D2750 using DT8108 open to 0.297".								
	10-Open up holes of Detail A to 0.297" (total of 2 holes per side)								

SAD

11/10/06

①

11/10/12

Dart Aerospace Ltd

W/O:

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp11-Weld D2744 Cap as per Dwg D2750 and QSI 004. Fill grooves in bend left
from bending as per QSI 004A/R Aluminum Rod batch: ☐ M118736

12-Grind welds flush as per Dwg D2750

BE 11/10/12
B 11/10/12

120



QC

Quality Control

QC10- Inspect visual per QSI004- ground welds

0.00

8 11/10/12

Memo

0.00

130



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

8 11/10/12

Memo

0.00

Dart Aerospace Ltd

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Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

Chemical Conversion Coat per QSI005 4.1

0.00



HandFinish

Memo

0.00

Hand Finishing

150

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

11-10-12

Dart Aerospace Ltd

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

160

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Open up holes of Detail C and ground handling to 0.625" (total of 8 holes per side)
as per dwg D2750.

2-Open up holes of Detail B to 0.750" (total of 4 holes per side)
as per dwg D2750.

3- Open float hole to 0.500" (4 per side)

4-Chamfer holes of Detail B, C, ground handling and float holes per dwg D2750
(welding instructions on sheet 8)

5-Deburr and blow out all chips from inside of tube

6- Prepare tube for welding, remove alodine as required.

7-Bond web D2739 in place as per QSI 015

A/R ☐☐☐ Sikaflex-291

batch: M118393

exp. date: 12-4-5

8- Weld spacers D3490-1, D3490-3 and D2743 as per dwg D2750 & QSI004
(welding instructions on sheet 8)

A/R ☐☐☐ Aluminum Rod batch: M118736

BE 11/10/13

9- At section AJ-AJ drill out x-bolt spacer to 0.404"

BE 11/10/13

10-Grind welds flush as per Dwg D2750

BB 11/10/13

11-10-12

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Customer:

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Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

11-Spot face ground handling holes section (total of 4 places per side) as per
dwg D2750

12-Debur holes

170

QC10- Inspect visual per QSI004- ground welds

0.00



QC

Memo

0.00

Quality Control

8/11/13

BB 11/10/13

180

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/11/13

(H)

Dart Aerospace Ltd

W/O:

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Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

190

Pressure Wash per QSI005 4.3

0.00



HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

1 BR 11-10-13

200

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

Powder Coating

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

3:00
320F
3:30

1 X 9 M 11/10/13

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

Inspect for foreign object per QSI 024

1 BR 11-10-14

M 118439

Dart Aerospace Ltd

W/O:

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Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

220



HandFinishing

0.00

HandFinish

Memo

0.00

Hand Finishing

1- Install inserts as per Dwg D2750

1 BR 11-10-14.

230



HandFinishing

0.00

HandFinish

Memo

0.00

Hand Finishing

1-Inspect for Foreign Objects

2-Spray inside of tube with "LPS-3" batch: 12/14

3-Install blade fitting D3488-041, wearshoes and ground handling hardware as per dwg D2750

SIKA FLEX 241

BATCH: 118393

EXP DATE: 12-5

4-assemble o'ring to plug as per dwg D3492 and apply o'ring lube

A/R 55-o'ring lube batch: 110348

5-Coat all exposed fasteners with "LPS Procyon" batch: 110348

114596

1 BR 11-10-14.

Dart Aerospace Ltd

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

240

QC5- Inspect part completeness to step on W/O

0.00

See below

QC

Memo

0.00

Quality Control

250

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

Rec'd 10/14 @

260

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

*****ensure antiseize is on AN8C21A bolts*****

See below

Dart Aerospace Ltd

W/O:

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Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270		0.00							
	Packaging								
Packaging	Memo	0.00							
Packaging	Package as per PPP D350-636-011								
280		0.00							
	QC21- Final Inspection - Work Order Release								
QC	Memo	0.00							
Quality Control									

Rev I

11/10/14

11/10/14

ME
11-10-14

Dart Aerospace Ltd

W/O:

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Picklist Print

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Page 1

Work Order ID: 74432

Parent Item: D350-636-011

Parent Item Name: Skidtube LH



Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:I 02.09.25 Rearranged procedure steps KJ
 IPP Rev:J 06-03-23 As per Rev D JLM
 IPP Rev:K 06-07.13 As per dsi9343 EC
 IPP Rev:L 07-07-28 Added SS Wearplates(Rev E) JLM Verf:EC
 IPP Rev:M 08-04-22 update steps 4, 13 DD verified by:EC
 IPP Rev:N 08-09-23 revF as per dwg DD verified by:ec
 IPP Rev:O 09-02-06 apply antiseize on AN8C21A bolts as per PAR09-010
 DD verf:EC IPP Rev:P 10.06.22 revise
 seq110 DD verf:EC IPP Rev:Q 10.10.01 as per IIN revH
 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID.	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D3492-1 Plug		Manufactured	No			230	Each	126.0000	8	8			
<div> <div>Location</div> <div>FP</div> <div>69531</div> <div>73402 ✓</div> </div> <div> <div>Loc Qty</div> <div>126</div> <div>8</div> <div>118</div> </div> <div> <div>Loc Code</div> <div></div> <div></div> <div></div> </div>													
D3492-3 Plug		Manufactured	No			230	Each	85.0000	8	8			
<div> <div>Location</div> <div>FP</div> <div>71838 ✓</div> <div>72126</div> </div> <div> <div>Loc Qty</div> <div>85</div> <div>76</div> <div>9</div> </div> <div> <div>Loc Code</div> <div></div> <div></div> <div></div> </div>													

BR 11-10-14.

BR 11-10-14.

Dart Aerospace Ltd

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Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

NAS1611-010

Purchased

No

230

Each

143.0000

8

8



O-RING

Location

Loc Qty

Loc Code

FP

129

117460

8

118077

1

118612 ✓

120

FP-A

14

110915

14

NAS1149D0863J

Purchased

No

250

Each

142.0000

2

2



WASHER

Location

Loc Qty

Loc Code

ST298

142

118078

142

D2744

Manufactured

No

110

Each

73.0000

1

1



Cap

Location

Loc Qty

Loc Code

LG002

17

62715

1

70881

16

WA

56

71861

56

BL 11-10-14.

[Signature]

118078

BE 11/10/12

Dart Aerospace Ltd

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Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D2600-3-BENT

Manufactured No

110 Each

18.0000

1



1

BB 11/10/13

Extrusion Bent

Location

Loc Qty

Loc Code

LG

18

66875

8

73253

10

1

D2743

Manufactured No

160 Each

230.0000

8



8

BB 11/10/13

Crossbolt Spacer

Location

Loc Qty

Loc Code

LG

172

69818

5

71839

103

73403

64

LG001

58

67766

4

68251

54

8

D2739

Manufactured No

160 Each

8.0000

1



1

BB 11/10/13

350 I Beam

Location

Loc Qty

Loc Code

LG

8

72154

4

72155

4

W/O:		WORK ORDER CHANGES					
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Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D3490-3 Manufactured No

160 Each

70.0000

4

4



Cross Bolt Spacer



BEN/10/13

Location

Loc Qty

Loc Code

LG

70

70768

10

73295

60

4

D3490-1 Manufactured No

160 Each

82.0000

4

4



Cross Bolt Spacer



BEN/10/13

Location

Loc Qty

Loc Code

LG

80

67773

5

69823

10

71841

65

4

LG001

2

62450

2

ALS4-1032-225 Purchased No

220 Each

1,852.000

38

38



Insert



BK 11-10-14

Location

Loc Qty

Loc Code

ST282

1852

110768

62

118386

860

118966

930

38

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, September 29, 2011 12:43:07 PM

Work Order ID: 74432

Parent Item: D350-636-011

Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D3793-3

Manufactured No

230

Each

16.0000

1

1



Wearshoe



PR 11-10-14.

Location

Loc Qty

Loc Code

FP018

16

70813

4

72160 ✓

12

AN8C35A

Purchased

No

230

Each

119.0000

1

1



BOLT



PR 11-10-14.

Location

Loc Qty

Loc Code

FP

83

117511 ✓

17

118286

66

FP-A

1

115960

1

ST345

34

117834

34

ST346

1

114442

0

115188

0

115960

1

D3793-1

Manufactured

No

230

Each

24.0000

1

1



Wearshoe



PR 11-10-14.

Location

Loc Qty

Loc Code

FP001

14

73422 ✓

14

FP018

10

70781

10

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QANCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:07 PM

Work Order ID: 74432

Parent Item: D350-636-011

Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D3488-041

Manufactured No

230

Each

21.0000

1

1



Blade Fitting Assembly, LH



BL 11-10-14.

Location

Loc Qty

Loc Code

FP

11

69903 ✓

11

FP007

1

61689

1

FP008

9

67788

1

71887

8

D3794-3

Manufactured No

230

Each

7.0000

1

1



Gasket



BL 11-10-14.

Location

Loc Qty

Loc Code

FP018

73423

7

70812

7

AN6C44A

Purchased No

230

Each

107.0000

4

4



BOLT



BL 11-10-14.

Location

Loc Qty

Loc Code

FG

2

103964

2

ST344

105

118332 ✓

15

118387

50

118985

40

4.

Dart Aerospace Ltd

WORK ORDER CHANGES

W/O:		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP						

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE (NCR)

NCR:		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
DATE	STEP		Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QAWCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:07 PM

Work Order ID: 74432



Parent Item: D350-636-011



Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

MS21083C8

Purchased

No

230

Each

85.0000

1

1



NUT



BK 11-10-14

Location

Loc Qty

Loc Code

FP-B

1

115884

1

ST293

12

118077 /

12

ST303

72

115884

0

118354

22

118614

50

D3536-25

Manufactured

No

230

Each

11.0000

1

1



Gasket



BK 11-10-14

Location

Loc Qty

Loc Code

FP012

11

70780

11

D3631-1

Manufactured

No

230

Each

155.0000

8

8



Washer



BK 11-10-14

Location

Loc Qty

Loc Code

ST072

155

68062 /

155

8

Dart Aerospace Ltd

WORK ORDER CHANGES

W/O:		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP						

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE (NCR)

NCR:		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
DATE	STEP		Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QANCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:07 PM

Work Order ID: 74432

Parent Item: D350-636-011

Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D3791-1 Manufactured No

230 Each

18.0000

1

1



Wearplate



BR 11-10-14

Location

Loc Qty

Loc Code

FP017

6

62239

2

69282

4

FP17

12

72158 ✓

12

1

AN960C10L

NAS1149C0332
R

✓ Purchased

No

230

Each

0.0000

38

38



washer

118 354



38. BR 11-10-14

D2745

Manufactured No

230

Each

213.0000

8

8



Bushing



BR 11-10-14

Location

Loc Qty

Loc Code

FP-A

51

69529 ✓

51

ST023

162

71835

162

8

Dart Aerospace Ltd

WORK ORDER CHANGES

W/O:		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP						

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE (NCR)

NCR:		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
DATE	STEP		Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QAINCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:07 PM

Work Order ID: 74432



Parent Item: D350-636-011



Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

AN3C5A

Purchased

No

230

Each

1,020.000

34

34



Bolt



BR 11-10-14.

Location

Loc Qty

Loc Code

FP-A

7

115835

7

ST350

1013

116419

28

117343

314

117764

169

117872

2

118451

500

34.

D3537-1

Manufactured

No

230

Each

159.0000

3

3



Wearpad



BR 11-10-14.

Location

Loc Qty

Loc Code

FP001

152

72124

32

73394

60

73395

60

FP017

7

69817

5

70686

2

3

NAS1149C0832R

Purchased

No

230

Each

351.0000

1

1



WASHER



BR 11-10-14.

Location

Loc Qty

Loc Code

FP-B

23

114915

23

ST297

328

114915

328

1

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QANCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:07 PM

Work Order ID: 74432



Parent Item: D350-636-011



Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

AN3C6A

Purchased

No

230

Each

256.0000

4

4



BR 11-10-14

BOLT

Location

Loc Qty

Loc Code

FP-A

1

111982

1

ST351

255

111982

2

116419

23

116549

2

116704

12

117619

10

117688

1

117872

5

118422 ✓

200

H.

NAS1611-013

Purchased

No

230

Each

140.0000

8

8



BR 11-10-14

O-RING

Location

Loc Qty

Loc Code

FP

55

117291

2

117887

53

FP-A

85

116582 ✓

5

118384 ✓

80

8

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QA\NCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:08 PM

Work Order ID: 74432



Parent Item: D350-636-011



Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D3535-25

Manufactured No

230 Each

21.0000 1 1



Wearshoe



BR 11-10-14.

Location

Loc Qty

Loc Code

FP018

21

62233

1

69743

7

73424 ✓

13

D3794-1

Manufactured No

230 Each

16.0000 1 1



Gasket



BR 11-10-14.

Location

Loc Qty

Loc Code

FP010

16

70779 ✓

16

MS21043-6

Purchased No

230 Each

529.0000 4 4



NUT



BR 11-10-14.

Location

Loc Qty

Loc Code

FG

20

103693

20

ST301

509

112314 ✓

299

117887

10

118384

200

D3493-1

Manufactured No

250 Each

65.0000 2 2



Washer



BR 11-10-14.

Location

Loc Qty

Loc Code

ST062

65

70697

27

71846

38

70697

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QAWCRWO RevE

Picklist Print

Thursday, September 29, 2011 12:43:08 PM

Work Order ID: 74432

Parent Item: D350-636-011

Parent Item Name: Skidtube LH



Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

MS21083C8

Purchased

No

250

Each

85.0000

2

2



NUT

Location

Loc Qty

Loc Code

FP-B

1

115884

1

ST293

12

118077

12

ST303

72

115884

0

118354

22

118614

50

118354

AN8C21A

Purchased

No

250

Each

81.0000

2

2



BOLT

Location

Loc Qty

Loc Code

ST345

81

118045

31

118758

50

118045

NAS1515H3L

Purchased

No

230

Each

141.0000

4

4



WASHER

Location

Loc Qty

Loc Code

FG

40

102472

40

ST277

101

113362

57

118686 ✓

44

4

BR 11-10-14

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Picklist Print

Thursday, September 29, 2011 12:43:08 PM

Work Order ID: 74432



Parent Item: D350-636-011



Parent Item Name: Skidtube LH

Start Date: 9/29/2011

Required Date: 10/13/2011

Start Qty: 1.00

Required Qty: 1.00

D2741

Manufactured No

250

Each

33.0000

1

1



Blade, 350 Skidtube



[Handwritten signature]

Location

Loc Qty

Loc Code

ST466

33

70667

33

Manufactured No

250

Each

36.0000

2

2

D3532-1



Spacer



[Handwritten signature] 11/10/14

Location

Loc Qty

Loc Code

ST065

15

69895

15

ST068

21

73342

21

[Handwritten signature] 69895

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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8 7 6 5 4 3 2 1

QTY -041	QTY -042	QTY -043	QTY -044	PART NUMBER	DESCRIPTION
X				D2750-041	350 SKIDTUBE ASSEMBLY, LH
	X			D2750-042	350 SKIDTUBE ASSEMBLY, RH
		X		D2750-043	350 SKIDTUBE ASSEMBLY, LH
			X	D2750-044	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	D2739	WEB
8	8	8	8	D2743	SPACER
1	1	1	1	D2744	CAP
8	8	8	8	D2745	BUSHING
1				D2750-1	SKIDTUBE WELDMENT, LH
	1			D2750-2	SKIDTUBE WELDMENT, RH
		1		D2750-3	SKIDTUBE WELDMENT, LH
			1	D2750-4	SKIDTUBE WELDMENT, RH
1		1		D3488-041	BLADE FITTING, LH
	1		1	D3488-042	BLADE FITTING, RH
4	4	4	4	D3490-1	SPACER
4	4			D3490-3	SPACER
		4	4	D3490-5	SPACER
8	8	8	8	D3492-041	PLUG ASSEMBLY
8	8			D3492-043	PLUG ASSEMBLY
		8	8	D3492-045	PLUG ASSEMBLY
1	1	1	1	D3535-25	WEARSHOE
1	1	1	1	D3536-25	GASKET
3	3	3	3	D3537-1	WEARPAD
8	8	8	8	D3631-1	WASHER
1	1	1	1	D3791-1	WEARPLATE
1	1	1	1	D3793-1	WEARSHOE
1	1	1	1	D3793-3	WEARSHOE
1	1	1	1	D3794-1	GASKET
1	1	1	1	D3794-3	GASKET
38	38	38	38	ALS4-1032-225	INSERT (OR ALS7-1032-225, AKS4-1032-225, AELS-1032-225)
34	34	34	34	AN3C5A	BOLT
4	4	4	4	AN3C6A	BOLT
4	4	4	4	AN6C44A	BOLT
1	1	1	1	AN8C35A	BOLT
38	38	38	38	AN960C10L	WASHER
1	1	1	1	AN960C816L	WASHER
4	4	4	4	MS21043-6	NUT
1	1	1	1	MS21083C8	NUT
4	4	4	4	NAS1515H3L	WASHER

GENERAL NOTES:

- MATERIAL: MAKE D2750-1/-2/-3/-4 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- FINISH: ACID ETCH, ALONDE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB. POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3. BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED
- BREAK SHARP EDGES: N/A
- IDENTIFICATION: N/A
- WEIGHT: D2750-041/-042/-043/-044 = 26.5 LBS
- WELD PER DART QSI 004
- INSTALL ALS4-1032-225 INSERTS AFTER FINISH AS INDICATED. DRILL 'F' SIZE HOLES ($\phi 0.297$) FOR WEARSHOE INSERTS
- FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
MINIMUM YIELD TENSILE STRENGTH = 35 KSI
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH AND AFTER INSTALLATION OF INSERTS. COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF POWDER COATING WITH MEK DEGREASER.
- SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

NO. 74432 M.L.J 9/29/11

RELEASED

F	INCORPORATE DSI 9413: QTY (3) D3537-1 WAS QTY (5) (ZN C8-1); D3791-1/-3 REPLACES D3535-13/-35 (ZN C8-1); D3794-1/-3 REPLACES D3536-13/-35 (ZN B8-1); ADD D3791-1 (ZN C8-1); WEARSHOE HOLES UNDER FWD/AFT SADDLE REMOVED (8 PL). WEARSHOE HARDWARE QTY UPDATED (ZN B8-1); D3488-041/-042 HARDWARE UPDATED (ZN C1-8, 9, 10, 11); ADD NOTE 12 AND 13 (ZN A6-1); REASON: REF. NCR 08-043	PH	08.07.16
E	CHANGE TO STAINLESS STEEL WEARPLATES; ADD RUBBER GASKETS, CHANGE INSERTS; ADD D3631-1; REMOVE QTY (38) NAS1515H3L; REMOVE QTY (10) NAS1515H8L; REMOVE D2741, QTY (2) AN960C816; REMOVE QTY (2) MS21083C8	CB	07.05.17
D	ADD HOLES AND SPACERS FOR APICAL FLOATS; INCORPORATE DEO 9133/9157	PH	06.01.05
C	ADD D2750-3/D2750-4; INCORPORATE D2738 AND D2740	CP	98.11.18
B	CHANGE MS24694-S293 TO AN8-16A	CP	98.09.01
A	NEW ISSUE	DS	98.04.16
REV.	DESCRIPTION	BY	DATE
DESIGN	PA	DART AEROSPACE USA, INC.	
DRAWN	REH	PORT HADLOCK, WA	
CHECKED	AS	DRAWING NO.	REV. F
MFG. APPR.	AS	D2750	SHEET 1 OF 11
APPROVED	AS	TITLE	SCALE
DE APPR.	AS	350 SKIDTUBE ASSEMBLY	NTS
DATE	08.07.16	COPYRIGHT © 1998 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMES BY COMMUNICATION TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

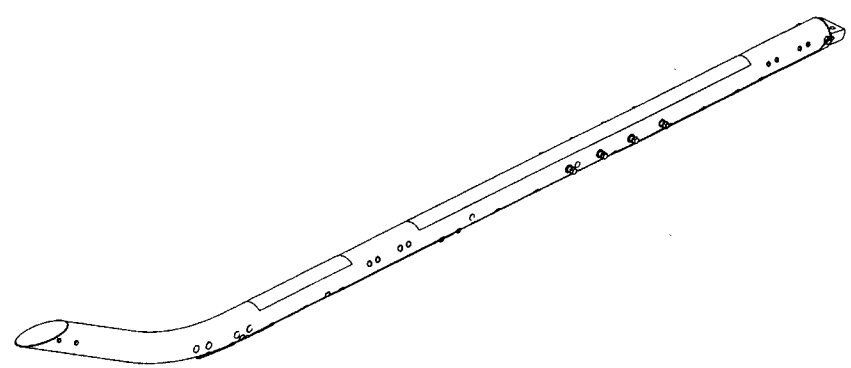
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

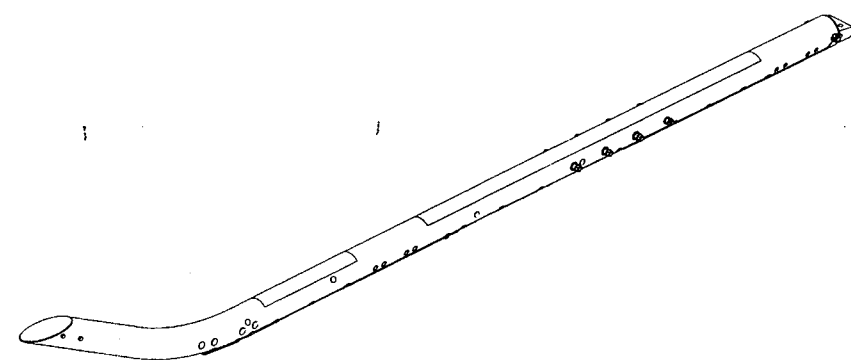
NOTE: Date & initial all entries

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74432



D2750-041 350 SKIDTUBE ASSEMBLY, LH



D2750-042 350 SKIDTUBE ASSEMBLY, RH

RELEASED
08.07.16

DESIGN	PCY	DART AEROSPACE USA, INC.	
DRAWN	AD	PORT HADLOCK, WA	
CHECKED	AD	DRAWING NO.	REV. F
MFG. APPR.	AD	D2750	SHEET 2 OF 11
APPROVED	AD	TITLE	SCALE
DE APPR.	AD	350 SKIDTUBE ASSEMBLY	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

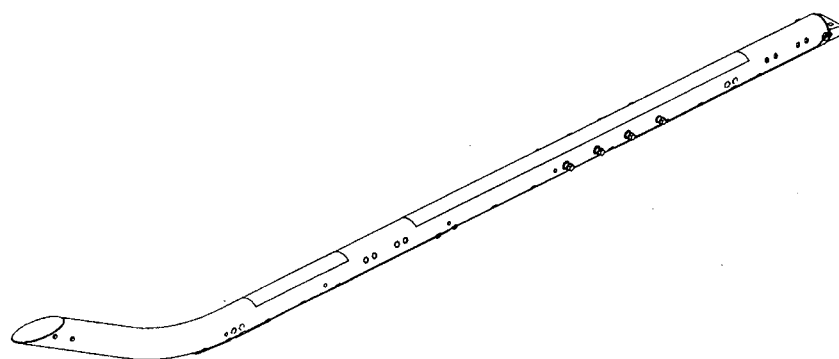
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NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

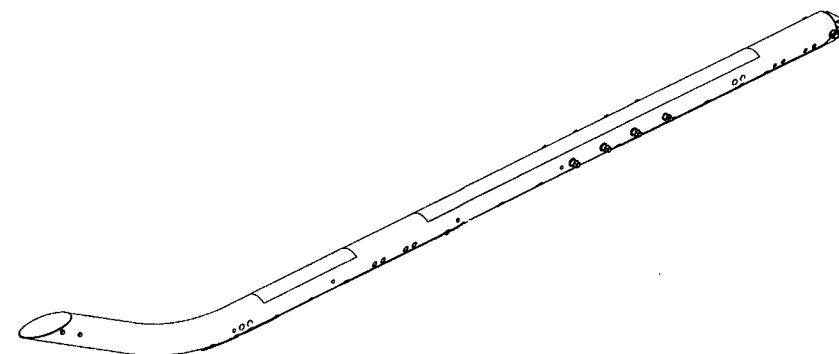
NOTE: Date & initial all entries

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D2750-043 350 SKIDTUBE ASSEMBLY, LH



D2750-044 350 SKIDTUBE ASSEMBLY, RH

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DRAWN	PD	PORT HADLOCK, WA	
CHECKED	NA	DRAWING NO.	REV. F
MFG. APPR.	NA	D2750	SHEET 3 OF 11
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DE APPR.	NA	350 SKIDTUBE ASSEMBLY	NTS
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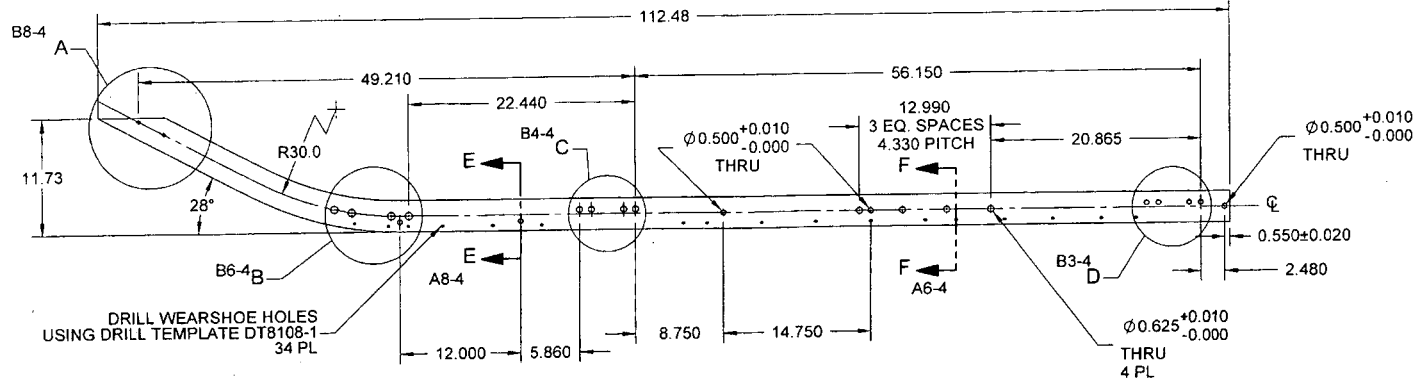
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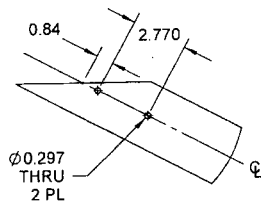
NOTE: Date & initial all entries

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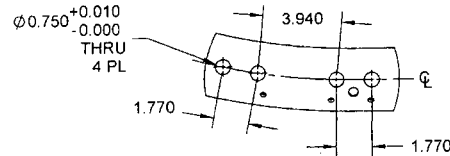
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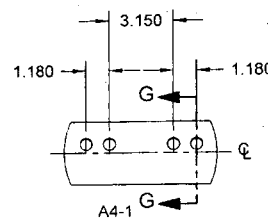
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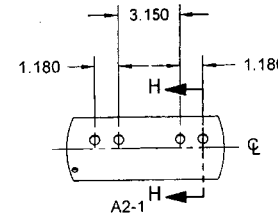
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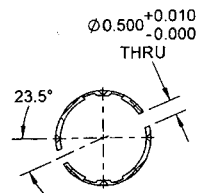
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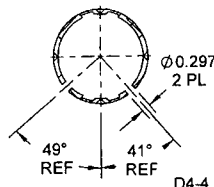
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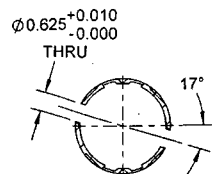
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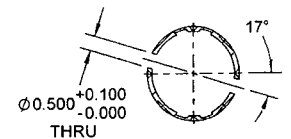
SECTION E-E
SCALE 3X, 2 PL



SECTION F-F
SCALE 3X, 17 PL



SECTION G-G
SCALE 3X, 4 PL



SECTION H-H
SCALE 3X, 4 PL

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W/O:		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP						

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 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

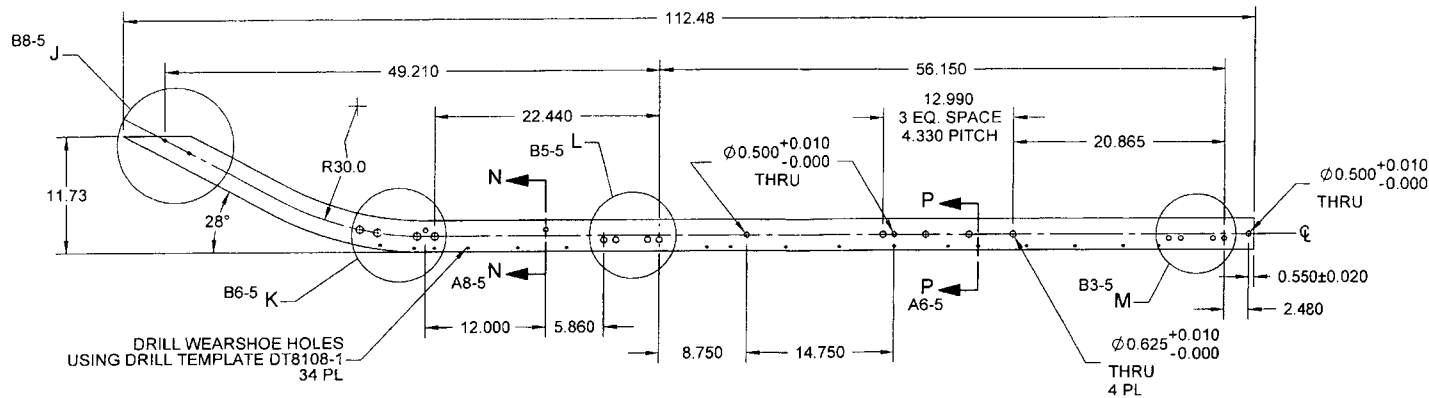
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NCR:		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
DATE	STEP		Initial Chief Eng	Action Description Chief Eng	Sign & Date			

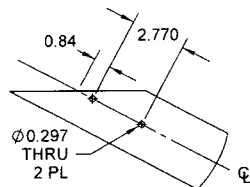
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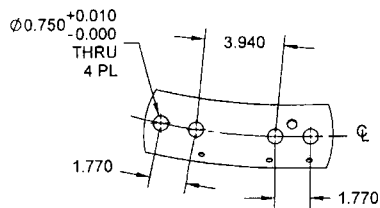
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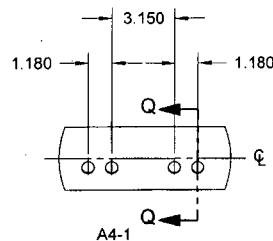
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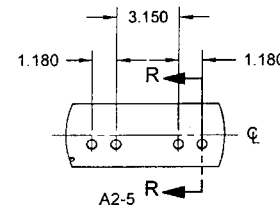
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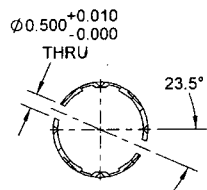
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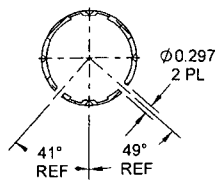
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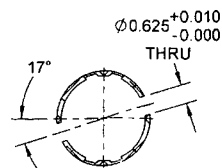
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SCALE 2X



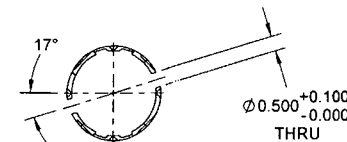
SECTION N-N
SCALE 3X, 2 PL



SECTION P-P
SCALE 3X, 17 PL



SECTION Q-Q
SCALE 3X, 4 PL



SECTION R-R
SCALE 3X, 4 PL

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

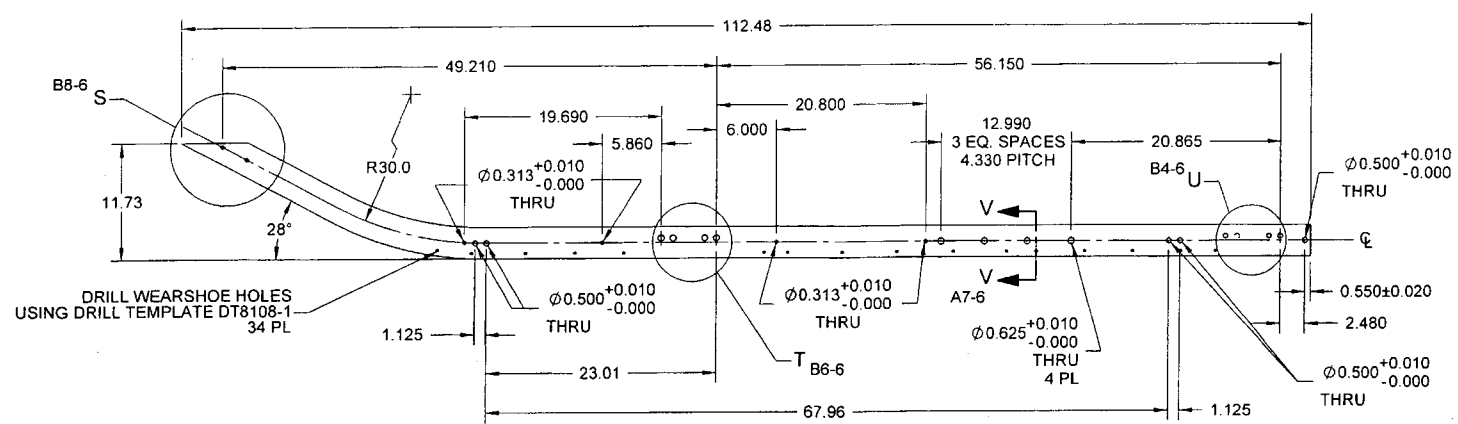
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

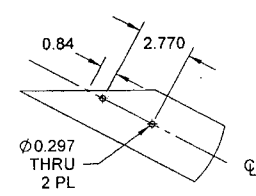
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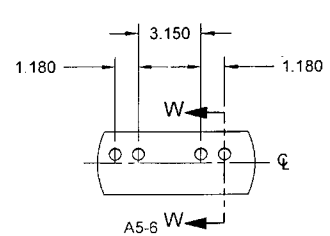
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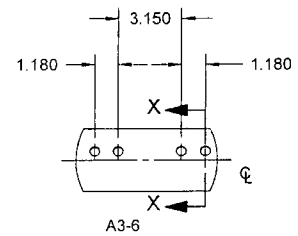
D2750-3 LH SKIDTUBE



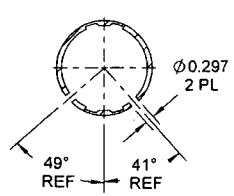
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SCALE 2X
D8-6



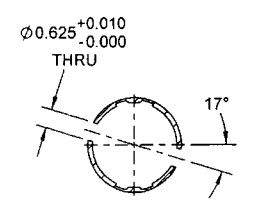
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SCALE 2X
C5-6



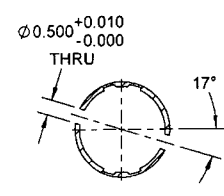
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SCALE 2X
D3-6



SECTION V-V
SCALE 3X, 17 PL
C4-6



SECTION W-W
SCALE 3X, 4 PL
B6-6



SECTION X-X
SCALE 3X, 4 PL
B4-6

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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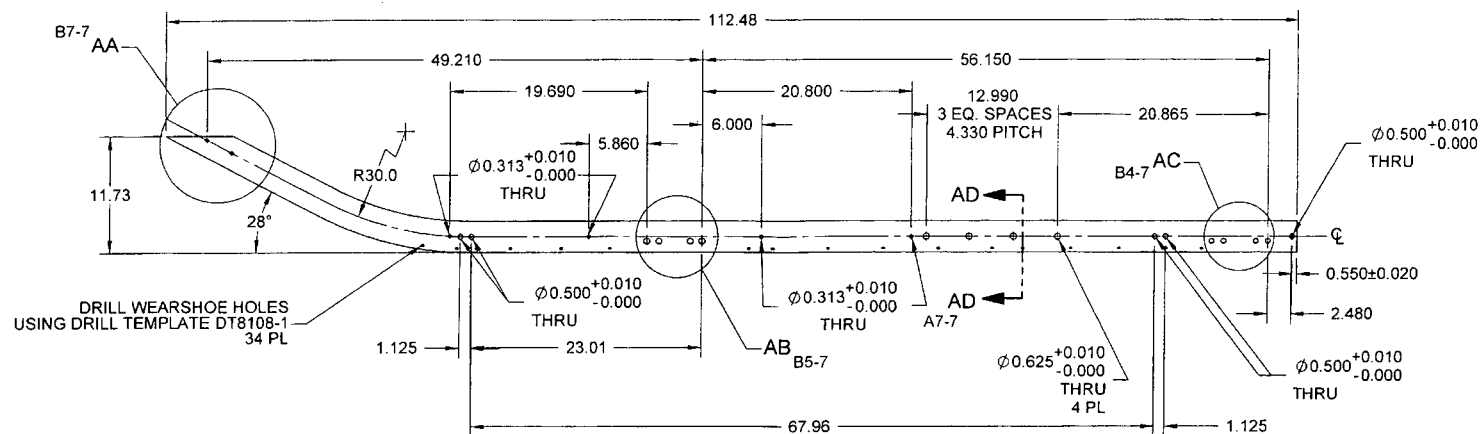
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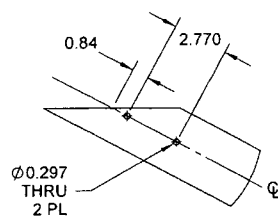
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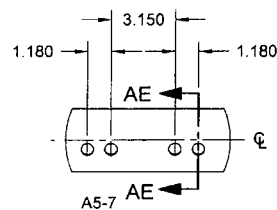
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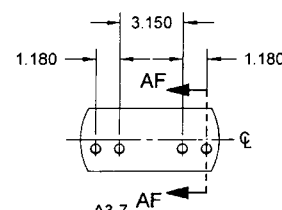
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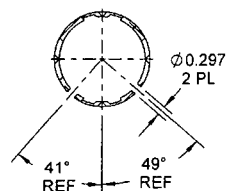
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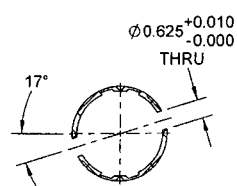
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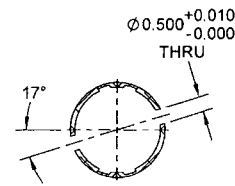
DETAIL AC
SCALE 2X



SECTION AD-AD
SCALE 3X, 17 PL



SECTION AE-AE
SCALE 3X, 4 PL



SECTION AF-AF
SCALE 3X, 4 PL

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APPROVED	PA	TITLE 350 SKIDTUBE ASSEMBLY	SCALE
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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WORK ORDER CHANGES

W/O:		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP						

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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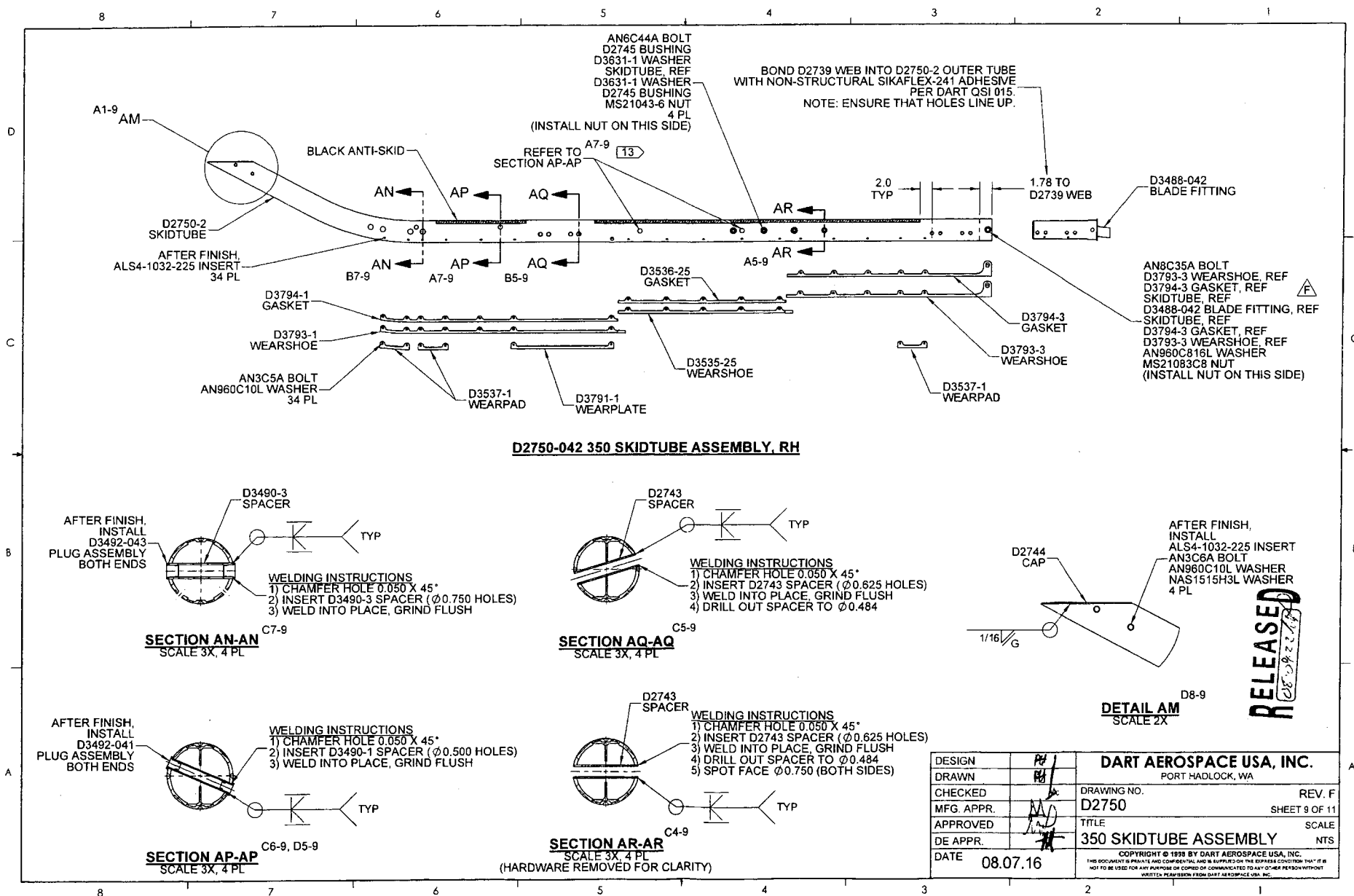
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DATE	STEP		Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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MFG. APPR.	MD	D2750	SHEET 9 OF 11
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Dart Aerospace Ltd

WORK ORDER CHANGES

W/O:							Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty			

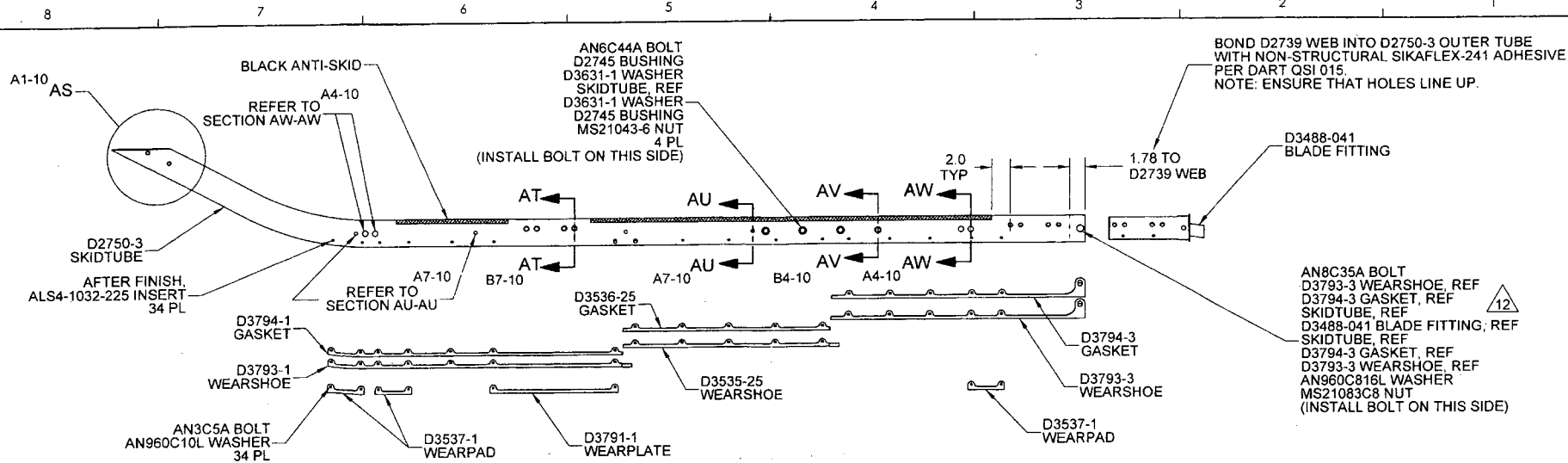
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WORK ORDER NON-CONFORMANCE (NCR)

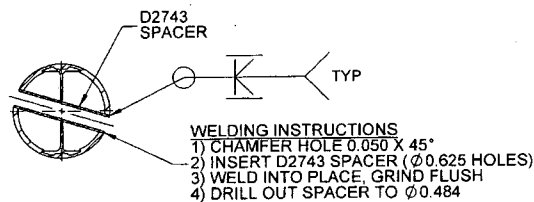
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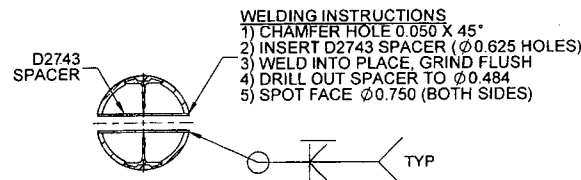
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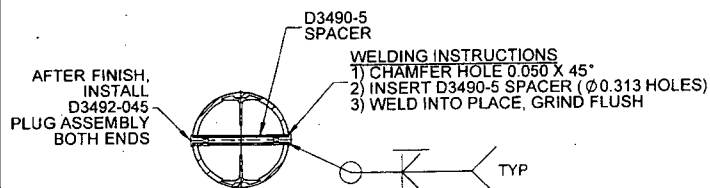
D2750-043 350 SKIDTUBE ASSEMBLY, LH



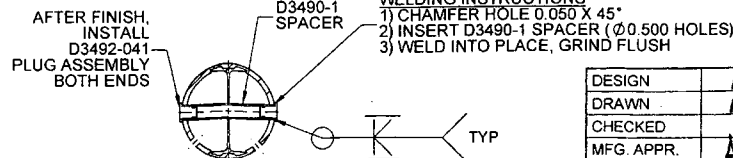
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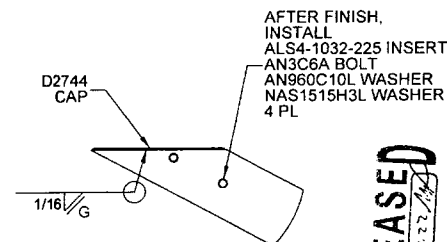
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SECTION AU-AU SCALE 3X, 4 PL



SECTION AW-AW SCALE 3X, 4 PL



DETAIL AS SCALE 2X

DESIGN	AS	DART AEROSPACE USA, INC.	
DRAWN	AS	PORT HADLOCK, WA	
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2018-08-22

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

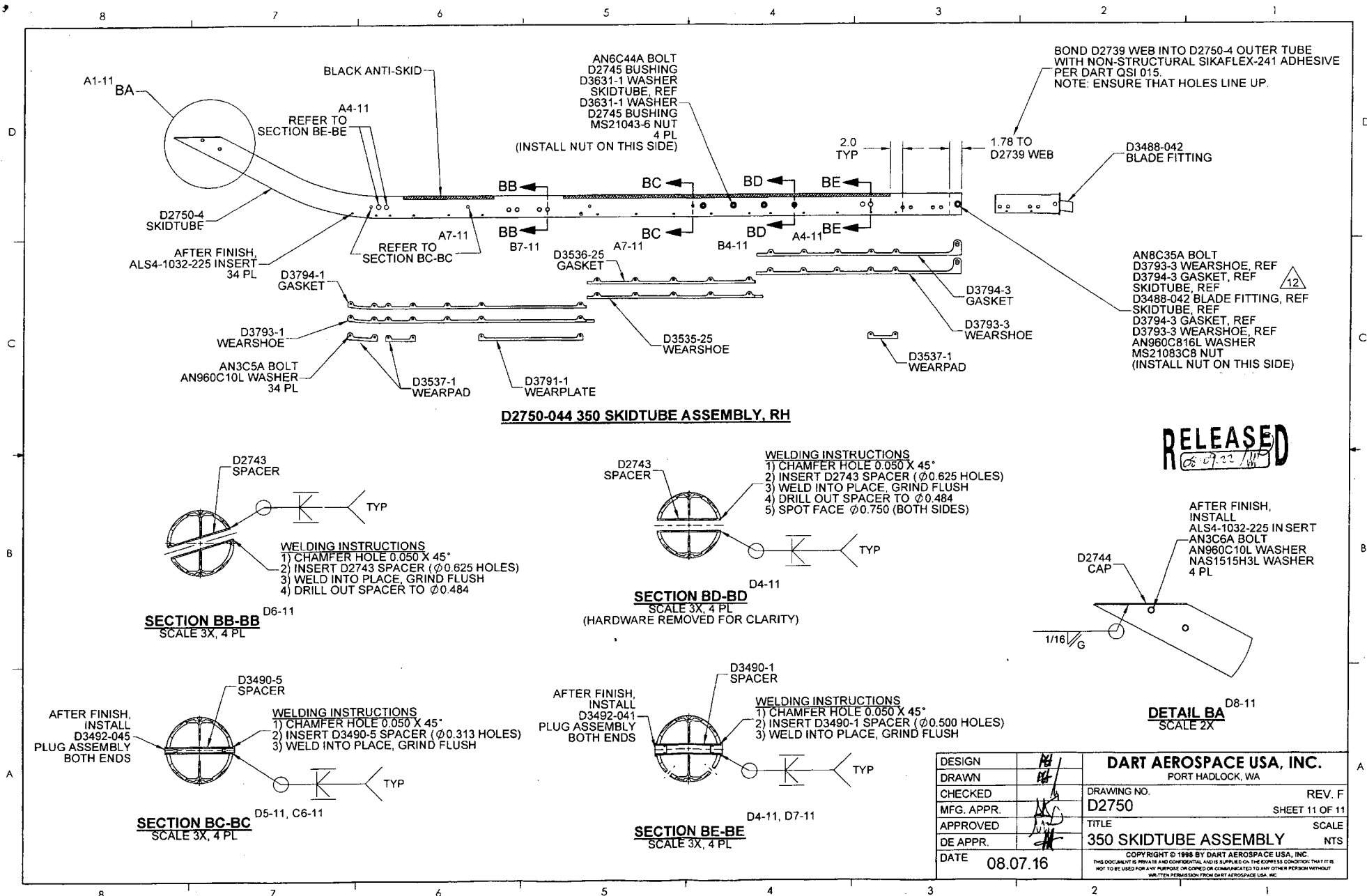
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QA\NCRWO RevE



Dart Aerospace Ltd

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NOTE: Date & initial all entries

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NO. 270

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: B 72821
Part number: D 350 636 D12
Description: 350 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Alum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Pat Cummings Date of Test Coupon 11-10-07
Welder Barclay Elliott Date of Test Coupon 11-10-07

The above named individual is qualified in accordance with AWS D17.1.2001 to weld

